

## CLAIMS:

1. A method in a computer system for displaying network management information for an optical network, said optical network comprising a plurality of nodes each comprising at least one optical component, and a plurality of links for transmitting optical signals between said plurality of nodes, said optical network further comprising at least one route of optical signal transmission, said route comprising a start node, an end node, and intermediate nodes and intermediate links through which an optical signal is transmitted between the start node and the end node on the route, wherein the intermediate links of said route are composed of a plurality of channels, and each of said channels is composed of at least one longitudinal segment, each of which longitudinal segments may be provisioned for data traffic by a network administrator, and wherein each of said optical signals is a multiplexed combination of a plurality of channel signals, each of said channel signals having associated therewith, a transmitter optical component and a receiver optical component, the method comprising:

upon selection of a network topology icon:

identifying in the plurality of nodes, add/drop nodes at which a channel signal may be added to, and/or dropped from, an optical signal on the optical network;

displaying a network topology panel; and

displaying in the network topology panel, a graphical representation of only those of the plurality of nodes which have been identified as add/drop nodes;

upon selection of an optical components icon:

awaiting selection of a selected route;

upon selection of a selected route, identifying  
the start node, at least one intermediate node,  
and the end node, of which the selected route is  
comprised;

displaying an optical components panel; and

displaying in the optical components panel  
graphical representations of at least one optical  
component of which the start node is comprised, at  
least one optical component of which the at least  
one intermediate node is comprised, and at least  
one optical component of which the end node is  
comprised, as identified for the selected route;

upon selection of a channel viewer icon:

awaiting selection of a selected route;

upon selection of a selected route, identifying  
each of the plurality of channels of which the  
links of the selected route are comprised;

displaying a channel viewer panel;

displaying in the channel viewer panel, a  
graphical representation of each of the plurality  
of channels identified for the selected route; and

communicating in association with each of the  
graphical representations of the channels, which  
of the longitudinal segments of which the channel

is comprised, has been provisioned for data traffic by the network administrator; and

upon selection of a transmitters/receivers icon:

awaiting selection of a selected route;

5        upon selection of a selected route, identifying information respecting the transmitter optical component and receiver optical component associated with the channel signal transmitted by each of the channels of which the links of the  
10        selected route are composed;

displaying a transmitters/receivers panel; and

displaying in tabular form in the transmitters/receivers panel, the information respecting each of the transmitter optical  
15        components and the receiver optical components identified for the selected route.

2.        The method of claim 1 further comprising:

when the network topology icon has been selected, displaying in the network topology panel, a graphical  
20        representation of those of the plurality of links which transmit optical signals between the add/drop nodes.

3.        The method of claim 2 further comprising:

when the network topology icon and a selected route have been selected, visually distinguishing in the  
25        network topology, the graphical representations of the start node, the end node, those of the intermediate nodes at which a channel signal may be added to and/or dropped from an

1005620-122601

optical signal being transmitted on the selected route, and the intermediate links, of which the selected route is comprised.

4. The method of claim 1 wherein when the optical components icon has been selected, the graphical representations of the optical components are displayed in a linear configuration, in a sequential order.

5. The method of claim 1 further comprising:

when the optical components icon has been selected, visually communicating in the optical components panel, a proportion of a traffic capacity of each link of which the selected route is comprised, which has been provisioned for data traffic by a network administrator.

6. The method of claim 5 wherein the proportion of the traffic capacity of each link which has been provisioned for data traffic is visually communicated by displaying a bar graph showing the traffic capacity of the link, and the proportion of that traffic capacity which has been provisioned for data traffic.

7. The method of claim 5 further comprising:

when the optical components icon has been selected, visually communicating in the optical components panel a proportion of, the traffic capacity of each link of which the selected route is comprised, which has been provisioned for data traffic, which has been provisioned for data traffic at a selected speed.

8. The method of claim 1 wherein when the optical components icon has been selected, only graphical

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representations of those optical components having selected characteristics, are displayed.

9. The method of claim 1 further comprising:

when the channel viewer icon has been selected,  
5 upon selection of a longitudinal location along the selected route, displaying in association with each of the graphical representations of the channels, information respecting the longitudinal segment of the channel associated with the selected longitudinal location along the selected route, in  
10 tabular form.

10. The method of claim 9 wherein the graphical representations of the channels are parallel bars, and the selection of a longitudinal location along the selected route is effected by moving a slide tab displayed along the  
15 parallel bars.

11. A computer-readable medium having stored thereon, instructions for a computer system to display network management information for an optical network, said optical network comprising a plurality of nodes each comprising at  
20 least one optical component, and a plurality of links for transmitting optical signals between said plurality of nodes, said optical network further comprising at least one route of optical signal transmission, said route comprising a start node, an end node, and intermediate nodes and  
25 intermediate links through which an optical signal is transmitted between the start node and the end node on the route, wherein the intermediate links of said route are composed of a plurality of channels, and each of said channels is composed of at least one longitudinal segment,  
30 each of which longitudinal segments may be provisioned for

10025626-122601

data traffic by a network administrator, and wherein each of said optical signals is a multiplexed combination of a plurality of channel signals, each of said channel signals having associated therewith, a transmitter optical component and a receiver optical component, said instructions causing said computer system to:

upon selection of a network topology icon:

identify in the plurality of nodes, add/drop nodes at which a channel signal may be added to, and/or dropped from, an optical signal on the optical network;

display a network topology panel; and

display in the network topology panel, a graphical representation of only those of the plurality of nodes which have been identified as add/drop nodes;

upon selection of an optical components icon:

await selection of a selected route;

upon selection of a selected route, identify the start node, at least one intermediate node, and the end node, of which the selected route is comprised;

display an optical components panel; and

display in the optical components panel graphical representations of at least one optical component of which the start node is comprised, at least one optical component of which the at least one

intermediate node is comprised, and at least one optical component of which the end node is comprised, as identified for the selected route;

upon selection of a channel viewer icon:

5           await selection of a selected route;

          upon selection of a selected route, identify each of the plurality of channels of which the links of the selected route are comprised;

          display a channel viewer panel;

10          display in the channel viewer panel, a graphical representation of each of the plurality of channels identified for the selected route; and

          communicate in association with each of the graphical representations of the channels, which

15          of the longitudinal segments of which the channel is comprised, has been provisioned for data traffic by the network administrator; and

upon selection of a transmitters/receivers icon:

          await selection of a selected route;

20          upon selection of a selected route, identify information respecting the transmitter optical component and receiver optical component associated with the channel signal transmitted by each of the channels of which the links of the

25          selected route are composed;

          display a transmitters/receivers panel; and

10025622-122601

display in tabular form in the transmitters/receivers panel, the information respecting each of the transmitter optical components and the receiver optical components identified for the selected route.

12. The computer-readable medium of claim 11 wherein said instructions further cause said computer system to:

when the network topology icon has been selected, display in the network topology panel, a graphical representation of those of the plurality of links which transmit optical signals between the add/drop nodes.

13. The computer-readable medium of claim 12 wherein said instructions further cause said computer system to:

when the network topology icon and a selected route have been selected, visually distinguish in the network topology, the graphical representations of the start node, the end node, those of the intermediate nodes at which a channel signal may be added to and/or dropped from an optical signal being transmitted on the selected route, and the intermediate links, of which the selected route is comprised.

14. The computer-readable medium of claim 11 wherein when the optical components icon has been selected, the instructions cause said computer system to display the graphical representations of the optical components in a linear configuration, in a sequential order.

15. The computer-readable medium of claim 11 wherein said instructions further cause said computer system to:



when the optical components icon has been selected, visually communicate in the optical components panel, a proportion of a traffic capacity of each link of which the selected route is comprised, which has been  
5 provisioned for data traffic by a network administrator.

16. The computer-readable medium of claim 15 wherein the proportion of the traffic capacity of each link which has been provisioned for data traffic is visually communicated by displaying a bar graph showing the traffic  
10 capacity of the link, and the proportion of that traffic capacity which has been provisioned for data traffic.

17. The computer-readable medium of claim 15 wherein said instructions further cause said computer system to:

when the optical components icon has been  
15 selected, visually communicate in the optical components panel a proportion of, the traffic capacity of each link which has been provisioned for data traffic, which has been provisioned for data traffic at a selected speed.

18. The computer-readable medium of claim 11 wherein  
20 when the optical components icon has been selected, the instructions cause the computer system to display only graphical representations of those optical components having selected characteristics.

19. The computer-readable medium of claim 11 wherein  
25 said instructions further cause the computer system to:

when the channel viewer icon has been selected, upon selection of a longitudinal location along the selected route, display in association with each of the graphical representations of the channels, information respecting the

10025620-122601

longitudinal segment of the channel associated with the selected longitudinal location along the selected route, in tabular form.

20. The computer-readable medium of claim 19 wherein the graphical representations of the channels are parallel bars, and the selection of a longitudinal location along the selected route is effected by moving a slide tab displayed along the parallel bars.

21. A network management computer system for displaying network management information for an optical network, said optical network comprising a plurality of nodes each comprising at least one optical component, and a plurality of links for transmitting optical signals between said plurality of nodes, said optical network further comprising at least one route of optical signal transmission, said route comprising a start node, an end node, and intermediate nodes and intermediate links through which an optical signal is transmitted between the start node and the end node on the route, wherein the intermediate links of said route are composed of a plurality of channels, and each of said channels is composed of at least one longitudinal segment, each of which longitudinal segments may be provisioned for data traffic by a network administrator, and wherein each of said optical signals is a multiplexed combination of a plurality of channel signals, each of said channel signals having associated therewith, a transmitter optical component and a receiver optical component, said computer system comprising:

a network database containing therein network information for the optical network;

a processor connected to said network database operable to retrieve network information from the network database;

5 a display connected to said processor for displaying network information;

network topology display means associated with said processor operable to cause the processor to:

retrieve from the network database, network information for the nodes;

10 identify in the network information for the nodes, add/drop nodes at which a channel signal may be added to, and/or dropped from, an optical signal on the optical network;

15 display on the display, a network topology panel; and

display in the network topology panel, a graphical representation of only those of the plurality of nodes which have been identified as add/drop nodes;

20 optical components display means associated with said processor operable to cause the processor to:

await selection of a selected route;

25 upon selection of a selected route, retrieve network information for the selected route from the network database;

identify in the network information for the selected route, the start node, at least one

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intermediate node, and the end node, of which the selected route is comprised;

display on the display, an optical components panel; and

5 display in the optical components panel graphical representations of at least one optical component of which the start node is comprised, at least one optical component of which the at least one intermediate node is comprised, and at least one optical component of which the end node is comprised, as identified for the selected route;

10 channel viewer display means associated with said processor operable to cause the processor to:

await selection of a selected route;

15 upon selection of a selected route, retrieve network information for the selected route from the network database;

20 identify in the network information for the selected route, each of the plurality of channels of which the links of the selected route are comprised;

display on the display a channel viewer panel;

25 display in the channel viewer panel, a graphical representation of each of the plurality of channels identified for the selected route; and

communicate in association with each of the graphical representations of the channels, which

10025628-122601

of the longitudinal segments of which the channel is comprised, has been provisioned for data traffic by the network administrator; and

transmitters/receivers display means associated

5 with said processor operable to cause the processor to:

await selection of a selected route;

upon selection of a selected route, retrieve from the network database, network information for the selected route;

10 identify in the network information for the selected route, information respecting the transmitter optical component and receiver optical component associated with the channel signal transmitted by each of the channels of which the  
15 links of the selected route are composed;

display on the display, a transmitters/receivers panel; and

20 display in tabular form in the transmitters/receivers panel, the information respecting each of the transmitter optical components and the receiver optical components identified for the selected route.

22. The computer system of claim 21 wherein said network topology display means is further operable to cause  
25 the processor to:

display in the network topology panel, a graphical representation of those of the plurality of links which transmit optical signals between the add/drop nodes.

10056628-122601

23. The computer system of claim 22 wherein said network topology display means is further operable to cause the processor to:

when a selected route have been selected, visually distinguish in the network topology, the graphical representations of the start node, the end node, those of the intermediate nodes at which a channel signal may be added to and/or dropped from an optical signal being transmitted on the selected route, and the intermediate links, of which the selected route is comprised.

24. The computer system of claim 21 wherein said optical components display means is further operable to cause the processor to:

display the graphical representations of the optical components in a linear configuration, in a sequential order.

25. The computer system of claim 21 wherein said optical components display means is further operable to cause the processor to:

visually communicate in the optical components panel, a proportion of a traffic capacity of each link of which the selected route is comprised, which has been provisioned for data traffic by a network administrator.

26. The computer system of claim 25 wherein the proportion of the traffic capacity of each link which has been provisioned for data traffic is visually communicated by displaying a bar graph showing the traffic capacity of the link, and the proportion of that traffic capacity which has been provisioned for data traffic.

10025628-122601

27. The computer system of claim 25 wherein said optical components display means is further operable to cause the processor to:

visually communicate in the optical components  
5 panel a proportion of, the traffic capacity of each link which has been provisioned for data traffic, which has been provisioned for data traffic at a selected speed.

28. The computer system of claim 21 wherein said optical components display means is further operable to  
10 cause the processor to:

display only graphical representations of those optical components having selected characteristics.

29. The computer system of claim 21 wherein said channel viewer display means is further operable to cause  
15 the processor to:

upon selection of a longitudinal location along the selected route, display in association with each of the graphical representations of the channels, information respecting the longitudinal segment of the channel  
20 associated with the selected longitudinal location along the selected route, in tabular form.

30. The computer system of claim 29 wherein the graphical representations of the channels are parallel bars, and the selection of a longitudinal location along the  
25 selected route is effected by moving a slide tab displayed along the parallel bars.

31. A method in a computer system for displaying network management information for an optical network, said

10025628-122601

optical network comprising a plurality of nodes and a plurality of links for transmitting optical signals between said plurality of nodes, wherein each of said optical signals is a multiplexed combination of a plurality of channel signals, the method comprising:

identifying in the plurality of nodes, add/drop nodes at which a channel signal may be added to, and/or dropped from, an optical signal on the optical network;

displaying a network topology panel; and

displaying in the network topology panel, a graphical representation of only those of the plurality of nodes which have been identified as add/drop nodes.

32. A method in a computer system for displaying network management information for an optical network, said optical network comprising a plurality of optical components, and a plurality of optical connections for transmitting optical signals between said plurality of optical components, said optical network further comprising at least one route of optical signal transmission, said route comprising a start optical component, an end optical component, and intermediate optical components and intermediate optical connections through which an optical signal is transmitted between the start optical component and the end optical component on the route, the method comprising:

awaiting selection of a selected route;

upon selection of a selected route, identifying the start optical component, at least one intermediate

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optical component, and the end optical component, of which the selected route is comprised;

displaying an optical components panel; and

displaying in the optical components panel

5 graphical representations of each of the start optical component, the at least one intermediate component, and the end optical component identified for the selected route.

33. A method in a computer system for displaying network management information for an optical network, said  
10 optical network comprising a plurality of nodes each comprising at least one optical component, and a plurality of links for transmitting optical signals between said plurality of nodes, said optical network further comprising at least one route of optical signal transmission, said  
15 route comprising a start node, an end node, and intermediate nodes and intermediate links through which an optical signal is transmitted between the start node and the end node on the route, wherein each of said links is composed of a plurality of channels, and each of said channels is composed  
20 of at least one longitudinal segment, each of which longitudinal segments may be provisioned for data traffic by a network administrator, the method comprising:

awaiting selection of a selected route;

upon selection of a selected route, identifying

25 each of the plurality of channels of which the links of the selected route are comprised;

displaying a channel viewer panel;

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displaying in the channel viewer panel, a graphical representation of each of the plurality of channels identified for the selected route; and

communicating in association with each of the  
5 graphical representations of the channels, which of the longitudinal segments of which the channel is comprised, has been provisioned for data traffic by the network administrator.

34. A method in a computer system for displaying  
10 network management information for an optical network, said optical network comprising a plurality of nodes each comprising at least one optical component, and a plurality of links for transmitting optical signals between said plurality of nodes, said optical network further comprising  
15 at least one route of optical signal transmission, said route comprising a start node, an end node, and intermediate nodes and intermediate links through which an optical signal is transmitted between the start node and the end node on the route, wherein each of said links is composed of a  
20 plurality of channels, each of said channels being capable of transmitting a channel signal, each of said channel signals having associated therewith, a transmitter optical component and a receiver optical component, the method comprising:

25 awaiting selection of a selected route;

upon selection of a selected route, identifying information respecting the transmitter optical component and receiver optical component associated with the channel signal transmitted by each of the channels of which the  
30 links of the selected route are composed;

10025623-122601

displaying a transmitters/receivers panel; and

displaying in tabular form in the  
transmitters/receivers panel, the information respecting  
each of the transmitter optical components and the receiver  
5 optical components identified for the selected route.

35. A method in a computer system for displaying  
network management information for an optical network, said  
optical network comprising a plurality of nodes each  
comprising at least one optical component, and a plurality  
10 of links for transmitting optical signals between said  
plurality of nodes, said optical network further comprising  
at least one route of optical signal transmission, said  
route comprising a start node, an end node, and intermediate  
nodes and intermediate links through which an optical signal  
15 is transmitted between the start node and the end node on  
the route, the method comprising:

upon selection of a selected node, displaying in  
tabular form in a routes panel, information respecting each  
route which includes the selected node.

20 36. A method in a computer system for displaying  
network management information for an optical network, said  
optical network comprising a plurality of nodes each  
comprising at least one optical component, and a plurality  
of links for transmitting optical signals between said  
25 plurality of nodes, said optical network further comprising  
at least one route of optical signal transmission, said  
route comprising a start node, an end node, and intermediate  
nodes and intermediate links through which an optical signal  
is transmitted between the start node and the end node on  
30 the route, said method comprising:

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upon selection of a selected link, displaying in a tabular form in a routes panel, information respecting each route which includes the selected link.

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